Montana Fish, Wildlife & Parks
Region 4
4600 Giant Springs Road
Great Falls MT 59405

May 29, 2019

Dear Interested Party:

Thank you for your input and feedback on the environmental assessment (EA) for the proposed action of stocking tiger muskie in Yellow Water and Big Casino Creek Reservoirs. The proposed action would be intended to act as biological control of nongame fish species in the proposed waterbodies. Both waters have overabundant populations of white sucker and/or common carp which reduce the productivity of the recreational fisheries. The goal of the proposed action would be to improve the recreational fisheries at both waterbodies while also providing unique angling experiences.

Enclosed is a decision notice document in which Montana Fish, Wildlife & Parks (FWP) explains its rationale for proceeding with the proposed action and responds to public comments received during the public comment period.

Please feel free to contact the local management biologist, Clint Smith, at (406) 538-2445 *227 with any questions you may have. Thank you for your interest and participation.

Sincerely,

Gary Bertellotti
Region Supervisor
FWP Region 4

ENVIRONMENTAL ASSESSMENT DECISION NOTICE

on

TIGER MUSKIE STOCKING IN YELLOW WATER AND BIG CASINO CREEK RESERVOIRS

Proposed Action

Montana Fish, Wildlife, & Parks (FWP) proposes to stock tiger muskie in Yellow Water and Big Casino Creek Reservoirs for the purpose of providing biological control of nongame species to improve the quality of the recreational fisheries.

Montana Environmental Policy Act

FWP is required by the Montana Environmental Policy Act (MEPA) to assess potential impacts of its proposed actions to the human and physical environments. In compliance with FWP's MEPA Public Involvement Policy, an Environmental Assessment was prepared by FWP for the proposed project and released on April 17, 2019 for public comment. The EA was titled *Tiger Muskie Stocking in Yellow Water and Big Casino Creek Reservoirs*. The EA was the subject of an FWP press release, was circulated to local sporting groups, and was posted and remains available for viewing on the FWP webpage at http://fwp.mt.gov/home/publicComments.html. The EA evaluated the potential impacts of the following alternatives in addition to the proposed action:

Alternative B: No Action

If the No Action alternative was adopted, no fisheries management action would be taken and the status quo would continue at each water.

Alternative C: Mechanical Suppression

If the Mechanical Suppression alternative was adopted, high-intensity, long duration trap netting of the reservoirs would occur in an effort to remove nongame fish from the waterbodies.

Alternative D: Piscicide Treatment

If the Piscicide Treatment alternative was adopted, a piscicide (rotenone) would be used to euthanize all fish in the reservoirs.

Summary of Public Comment and FWP Response

Ten commenters provided input during the public comment period, which ended on May 17, 2019. Eight comments were made via email and two comments were received in writing. Nine commenters were generally supportive of the proposed action to stock tiger muskie. No new information, concerns, or objections arose from the comments that were not evaluated or within the scope of the EA. Comment summaries and the Department's response are as follows:

Comment Summary 1

Some commenters expressed support for stocking the proposed reservoirs and appreciated the efforts to improve angling opportunities.

Response: Thank you for your comments.

Comment Summary 2

A comment expressed concern regarding escapement and impacts to downstream fisheries, particularly at Big Casino Creek Reservoir.

"I do not agree with the introduction of tiger muskie at Casino Creek Reservoir due to the unknown and possible impacts to the... neighboring ponds that support trout...for the local kids...The neighboring ponds are close...and stable. The tiger muskie would decimate the fishing in those ponds."

Response: Potential impacts to downstream waters were evaluated in Chapter 3, Section 2 of the Environmental Assessment. At Big Casino Creek Reservoir specifically, impacts to fish and aquatic resources from escapement downstream was identified as 'of little concern.' The reasoning for the lack of concern stems from the fact that the perennial flowing water of Casino Creek and Big Spring Creek does not provide adequate habitat for tiger muskie to persist. Additionally, northern pike are already present downstream of Big Casino Creek Reservoir, where they occasionally occupy back-waters and large scour holes until flows/temperatures/anoxic conditions displace them further downstream. Tiger muskie, should they escape downstream, would be anticipated to act similarly in terms of their occupancy and impacts. Given these reasons, new or cumulative impacts to existing fisheries in the drainage downstream are not anticipated. Additionally, Big Spring Creek is routinely monitored by FWP staff and should any unanticipated impacts occur, management actions could be taken to

minimize those impacts, such as mechanical removal and cessation of stocking.

The comment expressed concern about neighboring ponds managed for trout and kids fishing. This is assumed to be the Frog Ponds, however, the comment does not specify. Regardless, no impacts from the stocking of tiger muskie on ponds downstream would be expected. Outflows from Big Casino Creek Reservoir do not flow into a pond/reservoir until the Missouri River flows into Fort Peck. Barriers, in the form of dams and outlet structures would preclude tiger muskie from entering any of the area ponds/reservoirs. Because of this, no impacts to kids fishing ponds or trout fisheries would be expected from the proposed action.

Comment Summary 3

A comment expressed concern with the use of tiger muskie as a biological control tool.

"...I do not feel that the state...have (sic) enough data to support the sudden use of...tiger muskie. The previous introduction of this...species...has ruined the trout fishing at Deadman's Basin and is currently unmanaged at Ackley Lake...where the trout fishing has become dismal...I do not support the use of tiger muskie as a means of...fish control"

Response: Tiger muskie have been stocked primarily in central and eastern Montana since the late 1980's. To date, approximately 90,000 tiger muskie have been stocked in 20 waterbodies. The primary purposes for these stockings have been to reduce nongame fish abundance and/or to provide unique angling opportunities. Additionally, the practice of stocking tiger muskie as a biological control tool and to provide angling opportunity is increasingly common throughout the United States (e.g. Colorado (Lepak et al. 2014), Idaho (DuPont et al. 2011), New Mexico (Moffatt 2010), Pennsylvania (Lorantus and Kristine 2005), and Washington (Tipping 2001)). These efforts have had varying degrees of success and FWP fully acknowledges that biological control tools have associated risks, such as impacts to non-target species. Experiences documented in Colorado (Lepak et al. 2014), Montana (Smith and Miller 2018) and New Mexico (NMDGF 2014) illustrate that tiger muskie are not a silver bullet and can have undesirable impacts to recreational fisheries. Past experiences highlight the importance of careful consideration of stocking rates and target tiger muskie densities prior to using the fish as a biological control tool.

While outside the scope of the EA, it is interesting to investigate the comment that the trout fishery has changed drastically at Deadmans Basin Reservoir and Ackley Lake. At Deadmans Basin, tiger muskie have been used as a biological control tool since 1998. They were again

stocked in 1999, 2000, 2006, 2010, and 2015. A cursory investigation of the relative abundance of rainbow trout and sucker species, as documented by catch-per-unit-effort in fall gill nets, indicates that over the period of record (1988-2018), rainbow trout relative abundance is basically unchanged (linear regression coefficient of an increase of 0.09 fish/net-night per year) whereas sucker species abundance has a slightly negative trend (linear regression coefficient of a decrease of 0.55 fish/net-night per year). When one compares the same information before and after tiger muskie introduction, the data indicates rainbow trout relative abundance trends were -0.79 fish/net-night per year prior to tiger muskie introduction and +0.13 fish/net-night per year post tiger muskie introduction. Meanwhile, sucker relative abundance trends were -0.12 fish/net-night per year prior and -0.25 fish/net-nigh per year post tiger muskie introduction. The data from Deadmans Basin suggest that tiger muskie have been effective biological control, while not having long-term negative impacts on the abundance of the stocked trout fishery.

Impacts to Ackley Lake have been more pronounced and the initial stocking of tiger muskie in 2015 at Ackley was aggressive, combined with higher than anticipated survival of stocked tiger muskie fry. This has resulted in notable declines in the relative abundance of both stocked rainbow trout and sucker species. Rainbow trout trends in relative abundance, as indicated by catch-per-unit-effort in fall gill nets, indicates a slightly downward trend of -0.29 fish/net-night per year over the period of record (1989-2018) while white sucker abundance have trended slightly upward over the period of record at +0.19 fish/net-night per year. Comparing the pre- and post-tiger muskie relative abundance trends indicates that rainbow trout abundance was basically unchanged prior to tiger muskie at +0.008 fish/net-night per year and is trending negative in the 3-years following tiger muskie introduction at -4.50 fish/net-night per year. White sucker trends have gone from +0.61 fish/net-night per year to -9.25 fish/net-night per year before and after tiger muskie introduction, respectively. Catch rates at Ackley have declined following the introduction of tiger muskie. However, it is important to consider the relatively short timeframe following tiger muskie introduction and the fact that impacts to the white sucker population have been drastic. The trends at Deadmans Basin in the 5-years following tiger muskie introduction were similarly more drastic following the initial stocking of tiger muskie in 1998 (RB CPUE = -1.44 fish/net-night per year; SU CPUE = -4.49 fish/net-night per year), suggesting that the trends in relative abundance normalize with time following the initial introduction of tiger muskie.

The appeal of using tiger muskie as a biological control tool is that they are a sterile fish and thus their abundance and long-term presence can be controlled. Thus, if non-target impacts do occur, management efforts can attempt to reduce their abundance and over time they will die-out and no longer persist in the waterbody. Non-target impacts can also be mitigated by increasing and altering stocking strategies. Additionally, they convert typically undesirable biomass (sucker species/carp) into a unique angling opportunity that many recreationists enjoy. Given the attributes of tiger muskie, the fact that current recreational fisheries at both proposed locations are poor to non-existent, and the track record in Montana and throughout the United States, FWP believes the proposed action of stocking muskie as biological control to be a justified management strategy.

Comment Summary 4

A comment expressed concern regarding long-term survival in Yellow Water Reservoir and potential impacts of winterkill conditions.

"...will water levels affect their (tiger muskie) survival in Yellow Water...Do you think there's a chance they could winterkill?"

Response: Yes, there is a possibility of winterkill eliminating stocked tiger muskie from Yellow Water Reservoir. As discussed in the EA (Chapter 5, Section 1), Yellow Water Reservoir does have a history of boom-bust cycles typically triggered by environmental conditions impacting reservoir storage levels. During periods of drought, water levels in Yellow Water can be depleted such that the reservoir does not overwinter fish. The primary goal of the proposed management actions at Yellow Water are to improve the recreational trout fishery. If drought conditions induce fish kills that remove the nongame fish and tiger muskie from the reservoir, then FWP would anticipate returning to the boom phase of the cycle once water levels are restored and managing the reservoir for trophy rainbow trout. If this was to occur, continued tiger muskie presence would not be necessary or desirable until nongame fish reestablish in the reservoir.

If tiger muskie winterkill and the nongame fish persist, FWP would consider restocking with tiger muskie. If habitat conditions are such that tiger muskie do not survive and act as biological control, then FWP would consider alternative management actions at the reservoir (e.g. mechanical suppression, piscicide treatment, alter fish stocking program).

Comment Summary 5

Two comments expressed concern regarding stocking rates to ensure desired impacts are observed and inquired about future stocking rates.

"...I hope that the initial introduction will be sufficient to have a positive impact within a couple years and that a sport fishery can be reestablished soon...Will future stockings...be continued to maintain their population and effect if monitoring indicates their stocking was beneficial?"

"Since Yellow Water doesn't currently have any game fish, I would like to see as many tigers stocked as the reservoir can sustain."

> *Response*: Stocking rates of tiger muskie would be based on recommended fish per surface-acre rates from the literature, size of fish available at the time of stocking, forage availability, potential impacts to non-target species, and previous experiences with the species in Montana. The goal of the proposed stocking of tiger muskie is to improve the recreational fisheries by reducing nongame fish abundance. Yellow Water and Big Casino Creek Reservoirs would not be managed for tiger muskie specifically, rather the tiger muskie would be tools in an effort to improve the rainbow trout fishery at Yellow Water and the recreational fishery at Big Casino (currently largemouth bass and black crappie). Given the high survival rates that were observed at Ackley Lake, FWP plans to be more cautious with the initial stocking and stocking rates at the proposed waterbodies would be 2-5 per surface acre (stocking rates were approximately 15 per surface acre at Ackley Lake).
>
> Future and/or continued stocking of tiger muskie would be dependent on the status of the fisheries in each reservoir. At Yellow Water, if successful, tiger muskie stocking would likely be continued until a drought cycle induces a complete fish kill and the reservoir could potentially return to the boom phase of the cycle. At Big Casino, continued tiger muskie stocking would be dependent on nongame fish abundance and quality of the target recreational fishery. FWP considers it likely that tiger muskie could be continually stocked in Big Casino due to the upstream source of white suckers. Future stocking rates and frequency would be dependent on the fishery response and status following the initial tiger muskie introduction. Most of the scientific literature recommends a target abundance of adult tiger muskie (>30" or 3-4 year-old fish) to be 1-2 fish per surface acre. FWP would most likely plan future stocking to maintain that level of abundance.

Comment Summary 6

A commenter inquired about the use/stocking of other species in both reservoirs.

"Would other species also be considered? Like browns at Yellow Water due to summer water temperatures and if water clarity doesn't improve on Big Casino, catfish?"

> *Response*: This comment is outside the scope of the EA, but it is prudent to be transparent regarding future management plans at the proposed waterbodies. Currently there are no plans to change the direction of fisheries management at the proposed waterbodies. Other species could certainly be considered by FWP in the future or recommended to FWP by the public. Stocking additional species would be given sufficient environmental review before any actions would be taken and in accordance with FWP policy.

Comment Summary 7

A comment inquired about the possibility of transferring tiger muskie from Ackley Lake to the proposed waterbodies.

"Is there a feasible, cost efficient way to relocate...muskies from Ackley to these reservoirs? This could result in prompt predation on larger suckers and carp."

> *Response*: No, transferring tiger muskie from Ackley Lake is not an option. FWP has previously considered Wild Fish Transfers of Ackley tiger muskie. Part of the required process to perform a Wild Fish Transfer is to disease test the source waterbody to ensure FWP sanctioned fish transfers do not impose unnecessary risks of moving unwanted organisms or pathogens. Disease testing of Ackley Lake white suckers (used as a surrogate species due to the inability to get a large enough sample of tiger muskie) documented the presence of a virus among the white sucker population. The presence of this virus in Ackley Lake precludes transferring any fish sourced from the reservoir.

Decision

Based on the Environmental Assessment, public comment, and FWP evaluation, it is my decision to proceed with the proposed stocking of tiger muskie in Yellow Water and Big Casino Creek Reservoirs.

I find there to be no significant impacts to the human and physical environments associated with this project. Public comments received during the comment period showed general support for the proposed action. Therefore, I conclude that the Environmental Assessment is the appropriate level of analysis, and that an Environmental Impact Statement is not required.

Gary Bertellotti
Regional Supervisor
FWP Region 4

REFERENCES

DuPont, J., K. Schnake, T. Rhodes, and T. Kuzan. 2011. Tiger muskellunge as a biological control agent of brook trout in north central Idaho mountain lakes. 2011 Annual Report.

Lepak, J.M., C.N. Cathcart, and W.L. Stacy. 2014. Tiger muskellunge predation on stocked salmonids intended for recreational fisheries. Lake Reservoir Management. 30:250-257.

Lorantus, R. and D. Kristine. 2005. Muskellunge and tiger muskellunge management and fishing in Pennsylvania. Pennsylvania Fish and Boat Commission, Warmwater Unit. Available from www.fish.state.pa.us/pafish/kusky/00overview_musky.htm.

Moffatt, K. F. 2010. Tiger muskie hybrid wreaks havoc on lakes' undesirables. Sante Fe New Mexican (November 9):10.

NMDGF. 2014. Tiger Muskie in New Mexico: Bluewater and Quemado Reservoirs Management Brief. New Mexico Department of Game and Fish. Available from http://www.wildlife.state.nm.us/download/fishing/fish-warm-water/Tiger-Muskie-Management-Brief-2014.pdf.

Smith, C.J. and D.T. Miller. 2018. Lewistown Area Fisheries Management 2017 Annual Report. Montana Fish, Wildlife & Parks. Federal Aid Report. Project Number F-133-R17; F-133-R18.

Tipping, J.M. 2001. Movement of tiger muskellunge in Mayfield Reservoir, Washington. North American Journal of Fisheries Management. 21:683-687.